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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
NGUYEN, NGOC YEN M	

ART UNIT	PAPER NUMBER
1793	

NOTIFICATION DATE	DELIVERY MODE
11/02/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/567,579

Applicant(s)

WALSDORFF ET AL.

Examiner

Ngoc-Yen M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 6-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 6-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-4, 6-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, in the second "wherein" clause, it is unclear if "the oxidation catalysts" refer to just the "at least one further oxidation catalyst" in the second oxidation stage or all the catalysts used in both the first and second oxidation stages.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-4, 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al (4,774,070) in view of Abekawa et al (5,908,607).

Itoh '070 discloses a process for producing chlorine by oxidizing an offgas by-product of a reaction step of an organic compound containing hydrogen chloride therein, which comprises the following steps:

(1) subjecting the hydrogen chloride to an oxidation reaction at a temperature of 300 -

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500°C. in the presence of a chromic oxide catalyst by using oxygen in an amount of 0.25 mole or more per mole of the hydrogen chloride contained in the offgas to produce a reaction mixture;

(2) cooling said reaction mixture, which comprises chlorine, water, unreacted hydrogen chloride, oxygen and vaporized chromium, and then washing same with water at a temperature of 90 - 130°C. in a washing column, thereby recovering the chromium as an aqueous solution and yielding a remaining portion of gas;

(3) washing said remaining portion of gas again with water to absorb the unreacted hydrogen chloride in the water, so that the unreacted hydrogen chloride is recovered as an aqueous hydrogen chloride solution and yielding in a second remaining portion of gas;

(4) washing the second remaining portion of gas with sulfuric acid to remove water therefrom and to thereby yield a third remaining portion of gas;

(5) compressing and cooling the third remaining portion of gas, said portion comprising chlorine and unreacted oxygen, whereby the chlorine is separated as liquefied chlorine from the third remaining portion of gas thereby yielding a fourth remaining portion of gas; and

(6) recycling a portion or all of said fourth remaining portion of gas, which has been obtained after separation of said liquefied chlorine and comprises oxygen, as a circulating gas to the oxidation step (1) (note claim 1).

Itoh '070 discloses that the reactor may be fixed-bed reactor with the catalyst packed therein, a fluidized bed reactor with the catalyst maintained in a fluidized state or

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a reactor making use of both fixed-bed and fluidized bed systems (note column 5, lines 19-31). When both fixed-bed and fluidized bed systems are used, the reactants are either passed through the fixed bed first then through the fluidized bed or they passed through the fluidized bed first then through the fixed bed, thus, the teaching of Itoh '070 fairly teaches, with sufficient specificity, passing the reactants through the fluidized bed first then through the fixed bed, as required by the instant claim.

For claim 6, steps (3)-(5) of Itoh '070 are considered the same as the required claims d1)-d3), respectively. Also, the distillation step as shown in Figure 1, item (32) is considered as the purify step as required in step d4) (note column 9, lines 10-13).

For claim 7, Itoh '070 teaches that HCl recovered from step (3) can be recycled as the reactant for the process (note column 8, lines 8-15).

For claim 8, step (6) of Itoh '070 teaches the step of recycling oxygen.

For the reaction temperature and the number of fixed bed reactor or temperature zone, it would have been obvious to one skilled in the art to optimize these process conditions through routine optimization in order to obtain the best results.

For the hydrogen chloride conversion in the first oxidation stage limitation, when the process of Itoh '070 utilizes both fluidized and fixed beds, it would have been obvious to one skilled in the art to optimize the conversion % for the first oxidation stage in order to obtain the best overall conversion.

The difference is Itoh '070 does not disclose the use of a ruthenium oxide.

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Abekawa '607 discloses a process for producing chlorine using a ruthenium oxide catalyst which is supported on silica, titania, zirconia or alumina (note Examples 11-22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use ruthenium catalyst, as suggested by Abekawa '607, for the process of Itoh '070 because such catalyst has high activity.

Abekawa '607 also teaches that when the ruthenium catalyst is used, the reaction temperature is from 100 – 500°C, preferable from 200 - 380°C (note paragraph bridging columns 6-7).

Abekawa '607 can further be applied to teach that fluidized bed and fixed bed reactors, each has each own advantages (note column 6, lines 45-64), and based on these advantages, it would have been obvious to one skilled in the art to select the best arrangement for combination of fluidized bed and fixed bed and the best conditions for each bed.

Applicant's arguments filed August 8, 2007 have been fully considered but they are not persuasive.

Applicants argue that Itoh et al discloses that a fixed-bed reactor and fluidized-bed reactor may be used in combination, there is no disclosure or suggestion of using them in a particular order, or that there is any advantage from using the combination as opposed to one kind alone.

Since Itoh fairly discloses that a fixed bed reactor can be used in combination with a fluidized bed reactor, it would have been within the skill of the artisan to select the best order (out of only 2 possible order combinations, i.e. fixed bed then fluidized bed or fluidized bed then fixed bed) through routine experimentation. When the combination of reactors is used, the process of Itoh would inherently have the same advantage as the claimed process. There is no comparative example or any other evidence on record to show criticality or unexpected results for the use of the combination of a fluidized bed and a fixed bed or for any process condition as now claimed in Applicants' claims. Furthermore, as evidenced by Abekawa '607, advantages and disadvantages for both fluidized beds and fixed beds are known in the art of producing chlorine. Thus, when a combination of beds is used in a process of producing chlorine, one skilled in the art would have expected that the process would have the combination of the advantages.

Applicants argue that Itoh is limited to a specific chromic oxide-containing catalyst.

Granted that Itoh discloses the use of chromic oxide catalyst, however, Abekawa '607 teaches that the activity of chromium oxide catalyst is insufficient activity and high reaction temperature is required (note column 1, lines 31-36). Abekawa '607 further teaches that by using ruthenium catalyst, the reaction temperature can be conducted at a low temperature such as from 200 – 380°C (note paragraph bridging columns 6-7). Thus, it would have been obvious to one skill in the art to use ruthenium catalyst as suggested in Abekawa '607 in the process of Itoh because the ruthenium catalyst has high activity at lower reaction temperature.

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Applicants argue that Abekawa '607 discloses the alternative use of fixed bed and fluidized bed systems, but no disclosure of combining them.

Abekawa '607 is not relied upon to teach the combination of fixed bed and fluidized bed. Itoh '070 is applied as stated above for the combination. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicants argue that the claimed invention addresses the specific problem of the formation of "hot spots" and the problem of low space-time yields and these problems are solved by the method of Applicants' claim 1.

Again, the problems are well recognized in the art as evidenced by Abekawa '607. In any event, since Itoh '070 teaches the use of both fluidized bed and fixed bed in a process of producing chlorine, such process would inherently have the same advantages as the claimed process.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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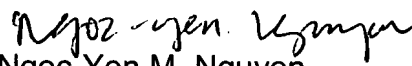
TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on a Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Ngoc-Yen M. Nguyen
Primary Examiner
Art Unit 1793

nmn
October 29, 2007